Department of Energy Standard Operating Procedure for Demolition of Facilities in Area IV at the Santa Susana Field Laboratory

Revision C

AUGUST 2016

ACRONYM LIST

ACM	Asbestos Containing Material
AHA	Activity Hazard Analysis
ALARA	As Low As Reasonably Achievable
AOC	Administrative Order on Consent
BMP	Best Management Practice
C&D	Construction and Demolition
CCR	California Code of Regulations
CFR	Code of Federal Regulations
D&D	Decommissioning and Demolition
DOE	Department of Energy
DOT	Department of Transportation
DTSC	Department of Toxic Substance Control
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ES&H	Environmental Safety and Health
ESA	Endangered Species Act
ETEC	Energy Technology Engineering Center
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HWMF	Hazardous Waste Material Facility
LLRW	Low Level Radioactive Waste
LLW	Low Level Waste
MLLW	Mixed Low Level (Radioactive) Waste
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NNSS	Nevada National Security Site
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollution Discharge and Elimination System
ORM	Other Regulated Material
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated biphenyls
PPE	Personnel protective equipment
QAPP	Quality Assurance Project Plan
RFI	RCRA Facility Investigation
RMHF	Radiological Materials Handling Facility

RSP	Radiological Survey Plan
SAP	Sampling and Analysis Plan
SSFL	Santa Susanna Field Laboratory
SWPPP	Stormwater Pollution Prevention Plan
TSCA	Toxic Substance Control Act
USEI	US Ecology Idaho
UST	Underground Storage Tank
WAC	Waste Acceptance Criteria
WMTP	Waste Management and Transportation Plan

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1. INTRODUCTION AND BACKGROUND

The Department of Energy's (DOE) Office of Environmental Management is responsible for the safe remediation, restoration, and mitigation of DOE liability from past operations at the former Energy Technology Engineering Center (ETEC) site. ETEC is located in Area IV of the Santa Susana Field Laboratory (SSFL). ETEC conducted research for nuclear and energy development projects.

DOE signed an Administrative Order on Consent (AOC) with the State of California (Department of Toxic Substances Control (DTSC)) in December 2010. The AOC defines the process for soil characterization, cleanup, and the end state for Area IV of the SSFL. This document describes the process/procedure that will be used to demolish the DOE structures in Area IV and to manage the disposal of materials generated by the removal of these structures.

DOE's ETEC research and test activities have been terminated and all DOE buildings and structures in Area IV have been determined to be surplus to DOE's needs. Removal of these features provides the unique opportunity to inspect, screen, and/or sample the soil directly beneath the facilities to comply with the AOC.

The demolition procedures that will be used to demolish DOE structures in Area IV of SSFL will involve:

- Pre-demolition Phase (Section 2)
- Demolition Phase (Section 3)
- Management of Demolition Materials and Waste Disposal (Section 4)
- Post Demolition Activities (Section 5).

It should be noted that by implementing this procedure DOE is targeting removal of man-made facilities and apparatus associated with their former site operations. This procedure **is not** intended to address/include any soil removal action that might otherwise be considered site remediation and subject to the requirements of the AOC.

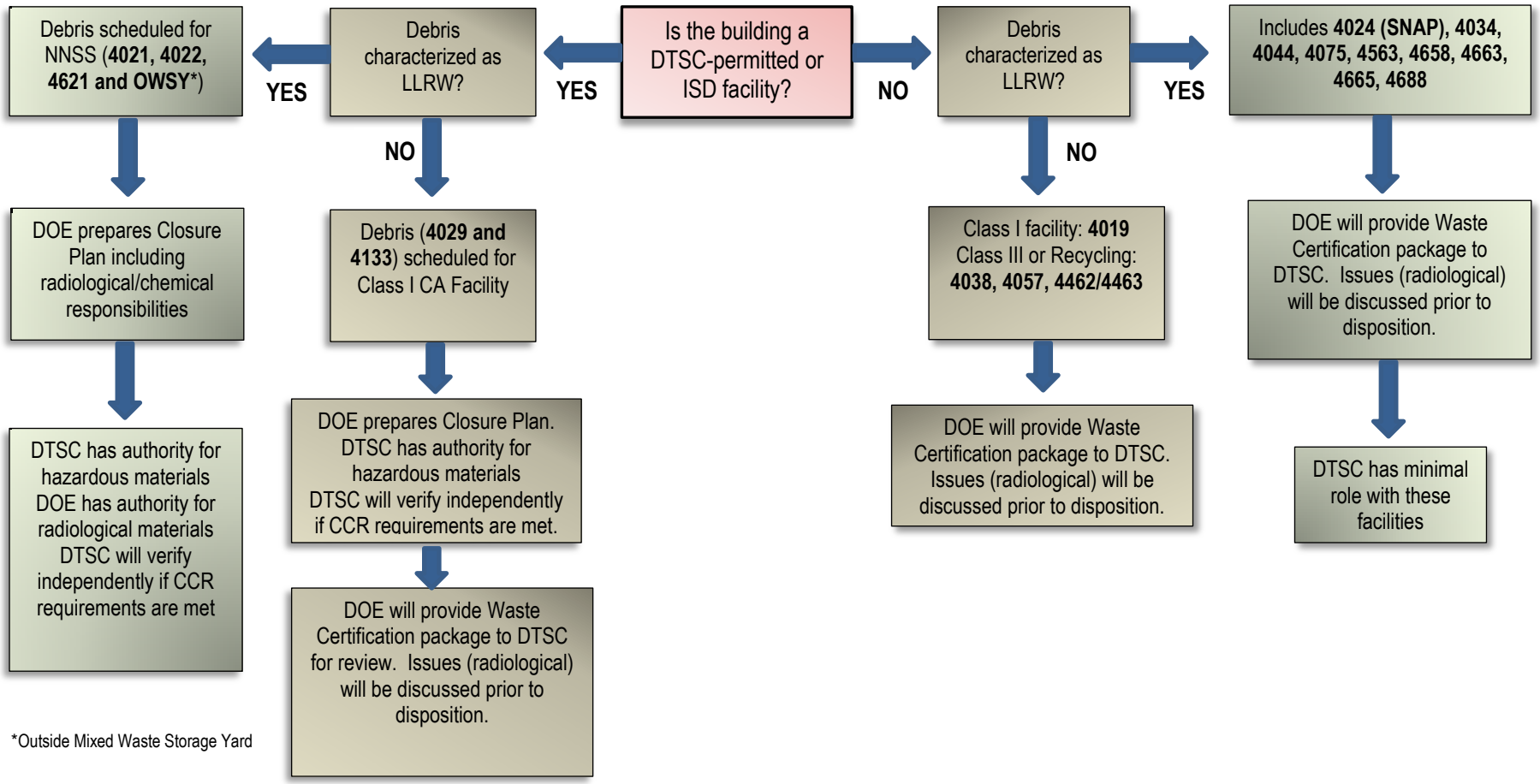
The buildings scheduled for demolition are included in Table 1. The table includes the oversight authority for each structure based on its permitted status. As such, DTSC will have approval authority over the demolition for the RCRA-permitted facilities. DOE will have authority for the demolition of the non-permitted facilities, and will provide the demolition work package documents prepared for these units to DTSC for information only. The flow chart provided in Figure 1 outlines the demolition decision flow chart that controls this process.

Table 1. Building Demolition Schedule

Building # (Facility)	Regulating Authority for Demolition
4019	DOE
4038	
4024 (SETF)	
4057	
4462/4463 (SPTF)	
Hazardous Waste Material Facility (HWMF): 4029, 4133	DTSC
Radiological Materials Handling Area (RMHF): 4021, 4022, 4621, OWSA* 4075, 4044, 4563, 4665, 4688, 4034, 4658, 4663	DTSC DOE

*Outside Mixed Waste Storage Area

Figure 1. Evaluation Process for Buildings Proposed for Demolition


Is the building a DTSC-permitted or ISD facility?
YES
Debris characterized as LLRW?
YES
Debris scheduled for NNSS (4021, 4022, 4621 and OWSY*)
DOE prepares Closure Plan including radiological/chemical responsibilities
DTSC has authority for hazardous materials DOE has authority for radiological materials DTSC will verify independently if CCR requirements are met
NO
Debris (4029 and 4133) scheduled for Class I CA Facility
DOE prepares Closure Plan. DTSC has authority for hazardous materials DTSC will verify independently if CCR requirements are met.
DOE will provide Waste Certification package to DTSC for review. Issues (radiological) will be discussed prior to disposition.
NO
Debris characterized as LLRW?
NO
Class I facility: 4019 Class III or Recycling: 4038, 4057, 4462/4463
DOE will provide Waste Certification package to DTSC. Issues (radiological) will be discussed prior to disposition.
YES
Includes 4024 (SNAP), 4034, 4044, 4075, 4563, 4658, 4663, 4665, 4688
DOE will provide Waste Certification package to DTSC. Issues (radiological) will be discussed prior to disposition.
DTSC has minimal role with these facilities
*Outside Mixed Waste Storage Yard

2. PRE-DEMOLITION PHASE

Pre-demolition activities include the following:

- Documentation Review
- Pre-demolition Inspections
- Pre-demolition Planning
- Appropriate Characterization Surveys
- Abatement Identification

2.1 Documentation Review

During the document review phase of each demolition project, an evaluation will be conducted of the potential hazards that may be encountered. Such hazards include potential exposure to contaminants that have been identified as a result of previous demolition activities in Area IV and throughout the site during the characterization process and the presence of subsurface features by inspection of facility utility maps and conducting geophysical surveys. The activities presented below will be performed as applicable.

2.1.1 Historical information pertaining to activities, processes, and chemical and radiological use at the planned demolition project site will be obtained to the extent practicable and reviewed to identify potential wastes and constituents of concern.

2.1.2 The review will focus on potential chemical/radiological residues and/or contamination that may be present on facility structural elements, floors, concrete/asphalt pavement, pads, ceilings, and equipment.

2.1.3 An attempt will be made to determine the nature and extent of any chemical or radiological leaks and other releases.

2.1.4 Applicable analytical data that may be available from storm water discharge monitoring, groundwater monitoring, facility investigations, site surveys, past demolition projects, and remediation activities will be reviewed to identify potential demolition material impacts.

2.1.5 Facility drawings, maps, logs, photographs, etc. will be reviewed to identify tanks and pressure vessels with potential residual material.

2.1.6 National Historic Preservation Act (NHPA) Process

Demolition activities will be performed in accordance with the NHPA and in consultation with the State Historic Preservation Office.

2.1.7 National Environmental Policy Act (NEPA)

Demolition activities will be performed after compliance with NEPA has been completed. The Programmatic Environmental Impact Report being prepared by the State of CA includes the analysis of all Area IV buildings prior to demolition activities. DOE will work with the

regulating authority to ensure that the proper information is provided for evaluation prior to work package document final approval.

2.1.8 California Environmental Quality Act

Decommissioning and Demolition (D&D) work package document will be completed to comply with California Environmental Quality Act requirements for the RCRA-permitted facilities only, to address the potential environmental impacts present during D&D activities and how they will be mitigated to reduce/eliminate affecting the environment.

2.1.9 Endangered Species Act (ESA)

Demolition activities will be performed to comply with the ESA and in consultation with the Federal Fish and Wildlife Service.

2.2 Pre-Demolition Inspections

During the inspection phase, physical inspections of demolition project sites will be conducted as needed to identify potential wastes and factors that may affect how those wastes are characterized. The results of the inspections will be used to confirm that the waste management strategies ensure wastes are addressed in compliance with requirements and are handled as safely and efficiently as possible. Inspections will be carried out by qualified and trained personnel as required.

Depending upon the particular site features being demolished, the following inspections may be performed:

- Asbestos and lead-based paint surveys
- Tank, pressure vessel, and equipment/infrastructure surveys
- General site safety and issues surveys (including equipment and infrastructure with potentially hazardous materials)
- Radiological surveys
- Confined space surveys
- Concrete assessment surveys
- Energetics surveys
- Underground features surveys
- Electronic waste surveys
- Coolant, hydraulic oil, refrigerant, and other fluid surveys.

Based on the outcomes of inspections that have been performed, waste management strategies will be incorporated into the Waste Management and Transportation Plan (WMTP), which will be prepared as part of the D&D Work Package Documents (see discussion in Section 2.3). If specific, non-routine features of concern are identified at the demolition project site, additional inspections may be conducted before the plan is finalized and provided to DOE for review.

Undocumented below grade, shallow depth man-made features, including storage tanks and buried liquid containment features (i.e., septic tanks, sumps, drains) will be located and investigated.

2.3 Pre-Demolition Planning

Pre-demolition planning activities include the following, as applicable:

2.3.1 Brief descriptions of the Controlled Project Documents are included below. Plans for permitted facilities will be provided by DOE to DTSC for review and approval, while the plans for non-permitted facilities will be provided for informational purposes. The documents will describe the technical approach for characterization sampling and analysis, demolition, and waste management and transportation for disposition. As noted in Table 1, where applicable – plans will address multiple facilities that fall under the same category. A description of the contents for the plans follows:

- Demolition Work Plan – Outlines the proposed demolition approach for each structure scheduled to be demolished, including equipment placement and use, dust mitigation measures, as well as the final site condition.
- Environmental Safety & Health (ES&H) Plan and Activity Hazards Analysis (AHA) - Safe work operations for personnel and the environment, as well as anticipated hazards and mitigations will be outlined in the ES&H Plan and associated AHA, including Personnel Protective Equipment (PPE), erosion control measures, postings and emergency instructions.
- Waste Management and Transportation Plan (WMTP) - Expected waste generation, segregation, handling, packaging, transportation and disposition pathways.
- Quality Assurance Project Plan (QAPP) - The QAPP will outline the required quality assurance aspects of the project; to ensure that compliance with regulations, standards and work controls are maintained.
- Radiological Survey Plan (RSP) – This plan will include information on the survey process to be performed on all structures prior to demo identifying levels of radiological contamination.
- Sampling and Analysis Plan (SAP) – The SAP will include the proposed sampling locations and methodologies, as well as the laboratory analysis for samples collected to characterize waste streams. Analytical results will be included in the Final Report prepared for the project.

2.3.2 Storm Water Pollution Prevention Plans (SWPPP) are developed for construction areas that are greater than one acre in size as required by the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08 DWQ. The SWPPP Notice of Intent (NOI) is filed with the State Water Quality Control Board. The landowner, The Boeing Company, will also be notified as the permittee.

SWPPP include appropriate Best Management Practices (BMPs) to address sediment runoff. BMP measures may include, when required:

- Erosion control fiber rolls (wattles) and silt fences that are maintained throughout demolition activities.
- Constant evaluation of the post demolition landscape for sediment runoff.
- Implementation and maintenance of final measures for long term control during site restoration. Hydroseed or Hydromulch is sprayed over the entire worksite to control storm water runoff and provide dust control, as it stimulates vegetation growth.

A Notice of Termination (NOT) for the SWPPP is submitted to the state water board once the area has regained 70% of its vegetation or when appropriate BMP measures as discussed have been implemented.

2.4 Radiological Surveys

Screening of buildings for radioactivity prior to demolition will be performed. Radiological surveys will be completed for the following buildings scheduled for demolition:

- 4038, 4057 4462 and 4463 - to confirm non-impacted status. Sentinel measurements will be collected in biased locations to demonstrate the buildings are not rad-impacted.
- 4019, 4133 and 4029 - Systematic, biased measurements will be taken and results compared to the Final Status Surveys to determine if radiological levels have changed (*Building 4019 Final Status Survey Report, 7/21/99; Verification Survey of Building 4029 and Building 4133, Santa Susana Field Laboratory, Ventura County, CA, Draft Report, February 2000*".).
- 4024 and the buildings in the Radiological Materials Handling Facility (RMHF) (4021, 4022, 4621 and adjacent storage yard, 4075, 4044, 4563, 4665, 4688, 4034, 4663and 4658) – to determine worker exposure to As Low As Reasonably Achievable (ALARA) and confirm physical conditions and to characterize waste material to comply with the disposal facility Waste Acceptance Criteria (WAC) for disposal. Samples will be collected and analyzed as well as biased, systematic measurements to compare results to Department of Transportation (DOT) and WAC limits.

Surveys will be conducted in accordance with the Radiological Survey Plan prepared under separate cover. This plan will specify:

- Area/Building survey classification (rigor of survey).
- List radiological Constituents of Potential Concern.
- List applicable criteria and/or survey informational objectives (release limits, confirmation level of confidences, waste acceptance criteria).
- Measurement techniques, analysis, and sensitivity requirements.
- Instrumentation requirements with associated sensitivity analysis.

- List radio-analytical requirements (analytical method and sensitivity requirements)
- List sample requirements (surface and volumetric) for radiological exposure and cross contamination analysis.
- List sample requirements to support compliance with DOT regulations and WAC.
- Provide a method by which debris, systems, and components are radiologically considered, quantified, and reported.

Specific survey unit design/work packages will be developed for individual areas to collect field survey measurements and samples. These work packages flow directly from the requirements found in the Site RSP.

The primary objectives of the radiological survey will be to:

- Confirm non-impacted status of buildings/locations designated as non-impacted, consistent with DOE free release standards,
- Determine worker and public exposure potential during demolition processes,
- Determine cross contamination potential and contamination control methods to be employed during demolition processes,
- Determine preliminary waste disposition.

2.5 Demolition Preparation and Abatement

Demolition preparation activities are performed as needed.

2.5.1 Utility Isolation and Verification

Once pre-demolition planning activities are complete, deactivation of any existing utility services to the structures will occur. Utilities requiring disconnection and cutting/capping include electric and potable water at the RMHF. All other facilities are currently "cold and dark" (i.e., without utilities). The Contractor will use a local, licensed company to de-energize electrical power from buildings where it is active, and notify SSFL Public Works to isolate water supplies at determined points. Labor personnel will be used to ensure accessible drains are isolated and/or plugged. The Contractor will coordinate with the site manager prior to performing any utility isolation.

2.5.2 Tank and Pressure Vessel Draining, Purging, and Disposition

The contents of tanks and pressure vessels located at demolition sites will be evacuated through depletion, transfer to other storage, or venting as applicable. With the exception of those designated for continued use that may be damaged by atmospheric exposure, tanks and vessels will be left open to the atmosphere once the contents have been evacuated.

Any water generated from demolition activities will be contained, characterized, and managed appropriately.

Tanks that have held hazardous materials or wastes, and are designated for disposal or recycling as scrap metal, will only be rinsed or otherwise cleaned in compliance with Section 67383.3 in

Title 22 of the California Code of Regulations (CCR).

Transportation of tanks and vessels off-site will be accomplished in compliance with Title 49 of the Code of Federal Regulations (CFR).

2.5.3 Removal of Potentially Hazardous Materials from Facility Lines and Equipment

Piping, tubing, compressors, pumps, hoists, and other equipment with refrigerants, oil or hydraulic fluid will be drained by a licensed contractor, if necessary, until no additional material can be removed. The contents will be captured, characterized, and transported as appropriate to a disposal or recycling facility.

Lines and equipment that have held hazardous materials or hazardous wastes, and are designated for disposal or recycling as scrap, will be managed as required by Title 22 of the CCR during demolition, and will not be rinsed or otherwise cleaned beyond gravity draining, physical scraping, wiping, pigging, etc.

2.5.4 Removal of Equipment, Appliances, Fixtures and Other Regulated Materials (ORM)

Prior to demolition, affected buildings and surrounding areas will be emptied of removable equipment and other non-fixed, unattached, or removable items that may present safety and/or waste management issues.

Lamps, ballasts, switches, mercury containing articles, and other Universal Wastes or ORM items which may be otherwise hazardous will be removed, segregated and containerized as required, and transported to an appropriate recycling or disposal facility. Examples of ORM include:

- Fluorescent tubes and other lamps
- Lamp ballasts/capacitors
- Thermostats
- Batteries
- Fire alarms
- Electronic switching equipment
- Pressure measurement instruments
- Other potentially regulated items.

2.5.5 Loose Paint Abatement

Paint on buildings and equipment is assumed to be lead-based, unless evidence obtained from pre-demolition surveys indicate otherwise.

If lead-based paint is present, the buildings and structures with areas of peeling or flaking paint, large enough to impact demolition waste characterization, will either undergo lead paint

abatement or the subsequent demolition waste will be managed as hazardous waste.

When lead abatement is performed, the removed material will be collected, containerized and managed as hazardous waste.

If significant amounts of paint are dislodged during demolition activities, this too will be collected and managed as hazardous waste.

2.5.6 Asbestos Abatement

A properly licensed asbestos abatement contractor will be employed to identify asbestos-containing material (ACM) during the pre-demolition survey, and then to remove the ACM prior to demolition. Sources of ACM may include:

- Floor tiles
- Caulking and mastic
- Pipe insulation
- Counter tops
- Building siding
- Oven insulation

The removal, handling, packaging, transportation and disposition of each type of asbestos waste will be in accordance with all applicable local, state and federal regulations. These processes will be defined in detail in the WMTP.

2.5.7 Removal of Potentially Hazardous Surface Deposits and Residues

During the pre-demolition surveys, trash and debris, deposits of potentially hazardous materials, and potentially hazardous residues of various kinds may be observed. These materials may be removed prior to demolition if the impact on waste characterization of the underlying material is significantly ameliorated, or the entire mass, including material and deposit/residue, will be characterized as whole to determine whether it is hazardous waste or not.

No sifting or invasive separation methods will occur in debris piles intermixed with soil, to ensure that soil conditions will not be disturbed without DTSC concurrence. Only visible debris or trash will be removed from piles.

Only physical/mechanical removal methods will be employed to remove deposits and residues. These methods may include:

- High Efficiency Particulate Air (HEPA) vacuum for potentially hazardous materials that are finely divided.
- Scraping and/or shoveling grease and other very viscous materials into containers.
- Spreading absorbents over oil and other low viscosity materials and picking up spent material with a shovel or broom and dust pan. Absorbents may be physically worked into deposits, residues, and stains before it is picked up.
- Wiping up low viscosity materials with rags, paper toweling, absorbent pads, etc.

- Cutting out sections that may be contaminated with hazardous materials and managing the sections separately from the mother material as suspect hazardous waste.

Potentially hazardous deposits and residues will not be rinsed or washed from materials that are to become wastes.

3. DEMOLITION PHASE

Demolition for the non-RCRA permitted facilities will begin when all documents are DOE-approved and all requirements are in place. Demolition for the RCRA-permitted RMHF and Hazardous Waste Material Facility (HWMF) will begin when DTSC has reviewed and approved all necessary documents, and is prepared to conduct oversight. The following tasks will be completed during the demolition phase:

3.1 Demolition Operations

All personnel involved in the demolition activities will be trained and hold Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) and appropriate radiation training (for demolition of radiological buildings). Project specific training will be provided during mobilization in accordance with the Training Matrix included in the Project Quality Plan.

3.1.1 Mobilization

Contractor will mobilize and maintain sufficient labor, equipment, and support resources on-site to complete the work. Requirements for utilities, access and other infrastructure will be included in the Demolition Work Plan. Contractor mobilization activities will be coordinated with the site operator. Activities to be conducted during Mobilization include:

- Provide site specific training to all approved documents to all personnel involved in the demolition and waste management activities.
- Install site boundaries, postings and traffic control.
- Install erosion control measures as outlined in the SWPPP.
- Prepare site infrastructure, such as laydown yards, equipment storage areas, sanitary facilities and construction management facilities.

3.1.2 Demolition

Contractor will implement field activities in accordance with the demolition technical approach described in the approved Demolition Work Plan. Field operations will include, but are not limited to, the following measures:

- Provide sufficient field oversight to maintain worker safety, radiological protections and procedures, storm water controls, and efficient project implementation.
- Controlled, safe demolition of each structure/building keeping demolition debris maintained with the building footprint as much as possible for safety.

- Demolition will be conducted in a manner to minimize comingling of waste types.
- Demolition will be conducted to avoid disturbance of underlying soil.
- Materials such as stained concrete will be segregated for subsequent characterization and disposal.
- During demolition activities, it may be necessary to remove minor amounts of soil that are in contact with building material or appurtenances undergoing demolition. Any soil that is required to be removed will be stockpiled in an appropriate location and dispositioned as necessary. While removal and disposition of soil is not within the scope of the demolition phase; soil removal will only be completed on a limited and as-needed basis to facilitate the completion of building and structure demolition. If contaminated soil removal for off-site disposal is necessary as the result of site stabilization or worker safety concerns, DTSC will be consulted prior to removal.
- Demolition will be conducted to minimize comingling of known waste types, handling of debris, and potential spread of contamination by size reducing, packaging, and shipping debris as they are generated. Stockpiling will be minimized.
    - Above-grade structures, concrete slabs, below-grade concrete vault foundations, and asphalt paving will be demolished by conventional means (with appropriate radiological controls for identified portions of radiologically contaminated facilities) and loaded into roll-offs or super-sacks as deemed most efficient by the subcontractor.
    - Below-grade concrete vault foundations from radiological facilities will be demolished by jackhammering or similar methods, breaking the concrete into pieces approximately manageable pieces; generally, 1-ft x 2-ft in size. Dust control measures, such as misting, will be used during this phase of demolition, to reduce generated dust sources. The blocks will be removed, wrapped, and shipped to the determined waste disposition site. Any incidental debris generated through cutting or excavation will be packaged in roll-offs or super-sacks as deemed most cost efficient by the subcontractor.
- Below-grade vault removal may require soil excavation to provide access and maintain set-back requirements for safe excavation. Excavated soils that are not suitable to remain on-site as backfill will be handled in accordance with state and federal waste management regulations.
- In the event that an undocumented (i.e., not identified or previously discovered) underground storage tank (UST) or other liquid containment feature is discovered during actual demolition activities work, demolition work in the vicinity of the discovered feature will cease immediately. DOE will notify DTSC in writing (email or written) within 24 hours of the discovery. DOE will also inform all other applicable agencies as required. The discovery will remain undisturbed until an appropriate investigation has been performed and an appropriate work instruction is developed and shared with DTSC.

3.1.3 Dust Control and Prevention

Dust control and dust protection measures are employed when the generation of dust resulting from demolition activities must be mitigated. The methods considered to mitigate airborne are presented below.

- Water sprays for dampening work areas during demolition activities.
- Water sprays for dampening un-mulched demolition areas during time periods when wind conditions create dust as appropriate. If the forecast calls for windy evening conditions, water sprays will be used to dampen subject work areas just prior to the end of the work day as well as covering with tarps or similar plastic material.
- Truck bed covers to contain dust in loads being transported off-site.
- Hydromulch or Hydroseed (using native plant seeding), silt fencing, erosion control wattles, burlap / straw / jute blankets and netting in post-demolition areas to aid in permanent dust mitigation.

3.2 Oversight by DOE

All field operations will be overseen by the DOE. The DOE will have a Safety Representative overseeing the D&D operations, including compliance with health and safety requirements. The DOE will monitor project progress and provide overall direction to North Wind. DTSC will have access to the site to monitor compliance with regulatory requirements.

4. MANAGEMENT OF DEMOLITION MATERIALS AND WASTE DISPOSAL

This section describes the DOE's procedure for waste characterization, packaging, shipping, and disposal of wastes generated during building demolition. These activities will be conducted within the framework established by Local, State, and Federal regulations, in coordination with the DTSC. Demolition materials will be characterized and categorized as Low Level Radioactive Waste (LLRW), Mixed Low Level Radiological Waste (MLLW), Hazardous Waste, Non-Hazardous Waste, or Recyclable Materials. All non-radiological buildings and structures in Area IV will be screened for radiological contamination prior to demolition, in accordance with the screening procedures outlined in the RSP. All screening procedures will be conducted by trained radiological control technicians.

4.1 Waste Characterization

All demolition materials will be characterized as non-hazardous or hazardous wastes in accordance with Environmental Protection Agency (EPA) SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"; Title 40 of the Code of Federal Regulations; Title 22 of the CCR; and Chapter 6.5 of Division 20 of the California Health and Safety Code. Samples will be collected in proposed locations and according to the methods outlined in the SAP.

4.1.1 Radiological Screening

Demolition materials will also be characterized as low level radioactive waste or non-

radiological material. Building structures, equipment, and materials, including road base, will undergo a pre-demolition radiation screening following the procedures outlined in the Contractor RSP.

For each non-radiological building element, if the pre-demolition screening detects no contamination exceeding the regulatory limits as defined in the RSP, no further screening of post-demolition debris will be performed. If contamination is detected above regulatory limits, demolition will proceed in accordance with the requirements for Low Level Waste (LLW) and MLLW presented below.

A waste certification package will be prepared that includes the survey results and certifies that the building debris/wastes can be disposed/recycled without further radiological controls. The contents and completion of the waste certification package will be outlined in the WMTP.

4.1.2 Characterization Studies

Certain types of uniformly characteristic demolition wastes at SSFL warrant characterization studies of waste streams that apply to a larger population than a single demolition site. These studies yield results that may be generalized and may be used to supplement generator process knowledge with additional empirical data. The process to develop these characterization studies and the applicable waste streams will be outlined in the WMTP. DTSC will have approval authority for the waste management and disposition information developed for the permitted facilities. Some examples of relevant characterization studies include:

- Stained and painted concrete floors and walls
- Utility poles
- Road base
- Concrete transformer pads

4.1.3 In-Situ Characterization of Demolition Wastes

Materials may be characterized before they become wastes, only when the boundaries of the area that will become waste are clearly identified, and when this will assist efforts to segregate non-hazardous from hazardous wastes or incompatible wastes during the demolition.

In-situ characterization of intact materials that are subject to demolition will be based on definitive, documented generator process knowledge and/or sampling performed in accordance with EPA SW-846 by State certified laboratories.

4.1.4 Characterization of Wastes in Containers

Demolition wastes that are contained in drums, cubic yard boxes, or roll-off bins will be characterized based on definitive, documented generator process knowledge using procedures defined in the SAP. The SAP will be developed in accordance with CCR Title 22, Division 4.5 – Hazardous Waste Control Laws; as well as in accordance with EPA and DTSC current policies and requirements, utilizing EPA SW-846 test methods performed at an Environmental Laboratory Accreditation Program (ELAP) certified analytical laboratory. If there is a

possibility that the wastes in a container are hazardous, the container will be managed as hazardous waste until characterization results demonstrate the wastes are non-hazardous. The WMTP will outline the requirements that are necessary for managing hazardous waste (i.e., labeling, container storage, spill prevention measures, etc.).

4.1.5 Characterization of Wastes in Trucks and/or Trailers

Using the waste profiling and manifesting procedures discussed in the WMTP, wastes will be characterized so completion of waste profiles can occur before they are transported to the approved off-site disposal facilities. Samples collected for waste characterization will be collected in accordance with the procedures outlined in the SAP. All loading operations will be visually observed by the Waste Management Specialist, and all manifests signed by the proper authority prior to leaving the site.

4.1.6 Generator Process Knowledge

As prescribed in Section 66262.11(b)(2) and (c)(2) in Title 22 of the CCR, generator process knowledge is an important component of waste characterization and is employed in concert with waste sampling and analysis to determine whether the waste is hazardous or non-hazardous.

Generator process knowledge may be used in limiting the number of analytes that are included in laboratory analyses of samples collected from wastes. Documentation supporting generator process knowledge may include:

- Applicable analytical data that was obtained for other purposes such as RCRA Facility Investigation (RFI), remediation confirmation sampling, process monitoring, health and safety environmental monitoring, etc.
- Chemical usage inventories applicable to a specific area.
- Historical analytical data pertaining to specific waste types and the characteristics that are exhibited by the wastes.
- Waste characterization studies that apply to the waste streams in question.

4.2 Radioactive Waste Management

The purpose of this section is to describe the requirements for the generation, characterization, storage, and disposal of LLW and MLLW associated with demolition activities. Management of all radioactive waste will be performed to comply with the DOE Order 435.1, Chg 1 Radioactive Waste Management (certified: 1/9/2007). The purpose of this DOE order is to "ensure that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment." The requirements of this Order will be monitored for applicable updates and/or modifications throughout the duration of the project to ensure compliance with the most current requirements.

The waste management activities at the site will consist of size reduction, characterization, certification, preparation for off-site disposal, and shipment. A section on the waste management and transportation

activities specific to the RCRA-permitted facilities will be included in the WMTP; with DTSC having approval authority. Separate sections will address the waste management and transportation for the non-permitted facilities, which DTSC will be allowed to review during overall document approval. DOE will review any DTSC comments that are provided and incorporate if needed.

The principal radioactive waste materials expected to be generated are contaminated concrete, contaminated metals, principally steel with small amounts of brass, copper, and aluminum, wood, filters (HEPA, pre and bag filters), and soft trash. The radioactive trash will be predominantly plastic sheeting used for contamination control, plastic shoe covers, latex rubber gloves, duct tape, and paper wipes. Other waste materials will include small hardware from the facilities, concrete rubble and blocks, soil, asphalt, gravel, and any construction rock removed from yard surface, driveways, and building foundations. In addition, waste may include large pieces of equipment and/or machinery, such as compressors, motor generators, and transformers.

Waste shall be generated, characterized, and packaged per specific waste handling procedures that provide the requirements for loading the waste into containers, recording its description, and completing the waste inventory documentation. All operations shall be performed by trained personnel and in full accordance with the processes and requirements contained in the approved project ES&H Plan and the QAPP. Containers may be stored at the job site, or be placed in storage at a limited access storage area, pending shipment. The Waste Management and Transportation Plan (WMTP) will include detailed procedures for waste generation, characterization, packaging and shipping, and quality assurance verification. These procedures shall comply with DOE, DOT, EPA, State of California, and the disposal sites' waste acceptance criteria (Nevada National Security Site (NNSS) WAC and Energy Solutions WAC, etc.) and the following requirements as appropriate:

1. DOE Order 435.1, "Radioactive Waste Management"
2. CFR Title 49 - "Transportation"
3. CFR Title 40 - "Protection of Environment"
4. CCR, Title 22, Division 4.5 (all "appropriate" requirements)
5. NNSS WAC "Nevada National Security Site Waste Acceptance Criteria"
6. Energy Solutions WAC "Energy Solutions Waste Acceptance Criteria".

There will be no on-site disposal of radioactive waste. All of the generated radioactive waste shall be shipped to off-site disposal sites approved by the DOE. Low Level Radioactive Waste (LLRW) and MLLW will be shipped to the DOE NNSS and/or US Ecology Idaho (USEI).

Non-radioactive waste generated at the site will be managed as described in Sections 4.4 and 4.5 for hazardous and non-hazardous waste respectively.

4.3 Mixed Low Level Waste

Management of any generated MLLW will include all of the requirements for LLW and in addition will comply with the requirements of Section 4.4, Hazardous Waste. Specific procedures for managing MLLW will be detailed within the WMTP.

4.4 Hazardous Waste

Hazardous wastes will be managed in accordance with Title 40 of the CFR, Title 22, Division 4.5 of the CCR, and Division 20, Chapter 6.5 of the California Health and Safety Code. All hazardous wastes will be accumulated in closed containers (including lined roll-off bins), tanks, or lined trucks/trailers that prevent the release of any material. Wastes that are hazardous or potentially hazardous will not be managed using practices such as stockpiling, where the wastes are accumulated outside of lined and closed containers.

Whenever there is the possibility that wastes are hazardous, even if the hazardous nature of the wastes has not been verified, the wastes will be managed as though they are hazardous, until they are verified through characterization to be non-hazardous.

If it is necessary to combine compatible non-hazardous wastes with hazardous or unverified potentially hazardous wastes, the resulting mixture will be managed as hazardous waste regardless of the properties of the waste resulting from the mixture.

Segregation, waste compatibility, container labeling, accumulation times, and all other management requirements for hazardous wastes stated in local, state, and federal regulations identified above will be observed for all wastes as applicable.

Containers will be kept securely closed, except when wastes are actually being transferred into or out of them.

4.5 Non-Hazardous Waste

Demolition materials determined to be both non-hazardous waste and non-radiological material will be stored, packaged, shipped, and disposed as solid waste in accordance with local, state, and federal regulations.

4.6 Recycling of Demolition Materials

Demolition materials will be recycled whenever possible and practical in compliance with Ventura County's Ordinance 4357 for construction/demolition debris. The WMTP will outline the specific procedures that ensure only the appropriate Construction and Demolition (C&D) waste is taken off-site for recycling. DTSC will be notified of the waste scheduled for recycling.

All recycling of demolition material is carried out in accordance with Chapter 6.5, Article 4 of Division 20 of the California Health and Safety Code and Chapters 11 and 16, Division 4.5 of Title 22 of the California Code of Regulations.

During demolition, recoverable metal will be segregated from other demolition wastes and transported to a metal recycling facility.

Tanks and pressure vessels will only be designated for recycling if they comply with the requirements of Section 67383.3 in Title 22 of the CCR and they have been rendered non-functional.

Only non-hazardous concrete and asphalt will be designated for recycling. In compliance with Ventura County's Ordinance 4357, concrete and asphalt are designated for recycling whenever the material conforms to regulatory requirements, standard industry practices, and guidelines published by governmental agencies and trade organizations. Consistent with Ordinance 4357, Construction and Demolition Recycling Plans and Reports will be provided to the controlling authority.

Any waste that is determined to be hazardous, through analytical testing or generator knowledge, will be managed as hazardous waste and transported off-site to a permitted facility.

Electronic and electrical items are segregated prior to and during demolition, as access and handling considerations allow.

- Potentially usable electronic devices may be separated from other electronic devices for processing by a reconditioning business.
- Electronic devices will be managed in accordance with regulations presented in Division 4.5, Chapter 23 of Title 22 of the CCR and will be transported to a recycler.
- Recoverable wire will be collected when possible and practical and transported to a recycler.
- Punchboards, cable harnesses, and other electrical wastes that are not attached to electronic devices and that are hazardous for lead content will be managed as hazardous wastes.
- All oil-filled transformers will undergo verification for the presence of polychlorinated biphenyls (PCBs). Verification may consist of certification stamps, plates, or stickers on the transformer body. Verification may require oil sampling and laboratory analysis if PCB certification is not present on the transformer.
- Operational transformers may be saved or sold for reuse. Discarded, non-PCB transformers may be transported to a recycler. Discarded transformers with above threshold concentrations of PCBs will be managed as hazardous waste in compliance with California hazardous waste regulations and Federal Toxic Substances Control Act (TSCA) regulations.

4.7 Transportation of Waste

Due to the sensitive nature of transporting the waste through the residential areas and in and out of SSFL, the specific procedures and relevant details for waste transportation will be defined in the WMTP. All personnel will be trained to these requirements prior to transporting any waste off-site. Waste disposition is controlled to cooperate with local homeowners adjacent to the site and along Woolsey Canyon Road. These requirements include, but are not limited to, the following:

- The number of loads leaving the site will be staggered to allow up to 96 round-trip truckloads per day to limit disruption to the local community. Permit loads shall be coordinated with the assigned Boeing Field Coordinator 48-hours in advance of arrival.
- It is likely that Boeing and NASA will also have trucks leaving the site; therefore, DOE will coordinate with the Boeing Field Coordinator to stagger loads so as to cause the least amount of disruption to the residents along Woolsey Canyon Road. Drivers will use the turnouts along Woolsey Canyon Road to allow motorists to pass.

- Truck drivers departing SSFL shall follow the direction of the Boeing Field Coordinator to ensure that the specific requirements outlined in the WMTP with regard to the requirements of waste transportation in place for the SSFL are met. In general, drivers shall not depart earlier than 7:00 am and not later than 4:00 pm.
- All out-bound waste containers will be covered prior to leaving the site. Visual inspections of the surfaces of the trucks, including tires, will be performed. If caked mud/soil is observed, it will be removed prior to the vehicle departure.
- Departures for dump trucks shall be scheduled in such a manner that is consistent with the transportation agreement with the SSFL site. To minimize noise impacts, drivers shall not use "jake-brakes," unless it is necessary. Drivers shall use the area outside the gate to check their brakes as needed, but will not wait for other drivers.
- Drivers shall not convoy through, or spend the night in, the adjacent neighborhoods.

5. POST -DEMOLITION ACTIVITIES

5.1 Post Demolition Survey

In preparation for soil sampling to be conducted under the AOC, the Contractor will perform scan surveys for gross gamma activity over accessible soil surfaces and evaluate survey data to identify potential areas of elevated gamma activity. The results of these surveys will be reported to the DTSC along with the required statistical evaluation.

The concrete slabs for buildings 4462 and 4463 are scheduled to remain in place. The Contractor will perform visual surveys and scan surveys for beta/gamma radiation. Areas of elevated activity, if present, will be reported to the DOE and further action will be evaluated at that time.

5.2 Interim Site Restoration

After demolition is complete at each site, the Contractor will grade the area to ensure that positive drainage is in place to minimize ponding or erosion. If needed, backfill will be used to obtain positive drainage.

Backfill operations for excavations greater the 3-feet deep will commence following the scan surveys and consultation with DTSC. Backfill will not be placed over any soil determined to require excavation in order to comply with the AOC and DTSC's requirements for remediation. DOE will ensure that any area that does not have backfill placed in order to undergo soil investigation in accordance with the AOC is left in a safe and secure manner; i.e., fall protection, boundaries, postings and notifications, etc. If possible, investigations associated with the AOC requirements will begin immediately; however, the timeframe will be determined by the regulating documents which are not part of this D&D. Excavations less than 3-feet deep will be re-graded using adjacent soils to restore site surface and ensure proper drainage. The demolition areas will be cleared of any remaining debris, and all boundaries and postings will be removed. Turnover with the AOC Contractor may occur to identify the locations of any areas that require subsequent investigation; imported backfill material will be approved by DTSC, and verified

by sampling by EPA, in accordance with requirements of the AOC. An acceptable source for backfill material will need to be identified during the initial phases of the D&D planning.

5.3 Reporting

Reporting includes the preparation of post-demolition summary reports for each non-permitted demolition project that includes completion of site restoration and waste disposal activities. This report will include post-demolition maps, field reports, screening and sample results, photographic documentation, and complete copies of the debris/waste documents for recycling and disposal. In addition, DOE will prepare Closure Reports for HWMF and the interim status portions of the RMHF for provision to DTSC for review and approval.